

Application Serial No.: 09/986,909
Reply to Office Action dated January 26, 2007

REMARKS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1, 2, and 4-13 are presently active in this case, Claims 1, 6, and 8 having been amended by way of the present Amendment. Care has been taken such that no new matter has been entered. (See, e.g., page 24, lines 2-11, and page 28, lines 1-25, and Figures 11A, 11B, 12A, 12B, and 13A-E of the present application.) The Applicants respectfully request entry of the amendments set forth herein as they are believed to place the application into condition for allowance.

In the outstanding Official Action, Claims 1, 4, 6, 9, and 10 were rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa (U.S. Patent App. Pub. No. 2003/0025824) in view of Ogata (JP 05-275201) and further in view of Johnson (U.S. Patent No. 5,861,654). Claims 1, 8, and 10-13 were rejected under 35 U.S.C. 103(a) as being unpatentable over Kanamori et al. (U.S. Patent No. 5,153,734) in view of JP 05-275201 and further in view of Johnson. Claim 2 was rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa in view of JP 05-275201 and Johnson and further in view of Tamura et al. (U.S. Patent No. 5,130,804). Claims 5 and 7 were rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa in view of JP 05-275201 and Johnson and further in view of Takachi (U.S. Patent App. Pub. No. 2003/0137595). For the reasons discussed below, the Applicants request the withdrawal of the obviousness rejections.

The basic requirements for establishing a *prima facie* case of obviousness as set forth in MPEP 2143 include (1) there must be some suggestion or motivation, either in the

references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, (2) there must be a reasonable expectation of success, and (3) the reference (or references when combined) must teach or suggest all of the claim limitations. The Applicants submit that a *prima facie* case of obviousness has not been established in the present case because the references, either when taken singularly or in combination, do not teach or suggest all of the claim limitations.

Briefly recapitulating, the present invention provides an apparatus and method that obtains numerous advantages, such as precise optical distance between a lens and a photoelectric conversion element that allows for quick assembly, a structure and method that allows for the manufacture of small camera modules with high yields, and the elimination of a process required to apply excessive heat to a photoelectric conversion element and an optical lens made of glass, both of which have weak heat resistance, thereby improving yield of manufacturing camera modules.

By way of illustration and not limitation, the present invention advantageously provides an area on the first connector (e.g. 240) in which electronic components can be mounted, such as a signal processing IC (234) by flip chip bonding. By so doing, a stack structure with the photoelectric conversion element (220) can be obtained. Thus, the structure has a big advantage in down-sizing of the module board area. (See page 27, lines 22-27, of the application and corresponding figures.) Furthermore, the present invention advantageously provides for insertion guide posts (e.g. 241) that can be used for inserting the second connector, such as lens holder (210). The insertion guide posts (241) are arranged at four corners of the first connector and are formed to protrude beyond an outer perimeter of the lens holder (210), as well as lens holder fixing metal fitting (244). Thus, it is possible to

prevent stress from being concentrated on the lens holder (210), as well as fitting (244). Thus, it is possible to prevent a reduction in image quality due to an impact from dropping the structure. (See page 28, lines 1-25, of the application and the corresponding figures.) out 13in which Figure 11B of the present application depicts an exemplary embodiment in which positioning pins (242, 243) have different shapes (at least two different shapes). This structure advantageously prevents the lens holder from being inserted in opposite direction, so that an operator does not fail to insert it in a correct direction.

Turning now to the recited claim language, independent Claim 1 recites an image pickup apparatus comprising, among other features, a first connector being in a shape of a frame having four corners and an area to mount electronic components, a second connector, a photoelectric conversion module, and positioning members that have at least two different shapes determining relative positions of the first connector, second connector and photoelectric conversion module, and wherein insertion guide posts used for inserting the second connector are arranged at the four corners of the first connector, and wherein the insertion guide posts protrude outward beyond an outer perimeter of the second connector. Independent Claim 8 recites a method for manufacturing an image pickup apparatus comprising, among other features, an installation step of arranging a first connector being in a shape of a frame having four corners and an area to mount electronic components, and an assembly step including determining relative positions of the first connector, second connector and photoelectric conversion module by positioning members that have at least two different shapes, and wherein insertion guide posts used for inserting the second connector are arranged at the four corners of the first connector, and wherein the insertion guide posts protrude outward beyond an outer perimeter of the second connector. The Applicants submit

that the cited references, either when taken singularly or in combination, fail to disclose or suggest all of the above limitations.

Regarding the Ishikawa reference, the Official Action cites position defining member (3) for the teaching of the first connector of Claim 1, image pickup optical system (2) for the second connector, and a solid-state image pickup package (1) for the photoelectric conversion module. The Official Action further cites positioning projections (11) for the teaching of the positioning members of Claim 1.

The Applicants note, however, that the Ishikawa reference does not disclose or even suggest insertion guide posts used for inserting the second connector that are arranged at the four corners of the first connector, and wherein the insertion guide posts protrude outward beyond an outer perimeter of the second connector, as recited in Claim 1. The position defining member (3) of the Ishikawa reference does not include such insertion guide posts as recited in Claim 1, and, as is evident from a review of the figures (e.g. Figures 1-4, 8, and 15), the position defining member (3) clearly does not include any structure that protrudes outward beyond an outer perimeter of the image pickup optical system (2), which is cited for the second connector of the present invention.

Additionally, the Applicants submit that the JP 05-275201 reference does not supplement the above deficiencies in the teachings of the Ishikawa reference. The JP 05-275201 reference is cited for the teaching of a spring electrode as claimed. The JP 05-275201 reference does not disclose or even suggest insertion guide posts used for inserting the second connector that are arranged at the four corners of the first connector, and wherein the insertion guide posts protrude outward beyond an outer perimeter of the second connector, as recited in Claim 1. As is evident from the figures in the JP 05-275201

reference, this reference does not disclose or even suggest any structure that reads on the insertion guide posts recited in Claim 1 of the present application.

Furthermore, the Applicants submit that the Johnson reference does not supplement the above deficiencies in the teachings of the Ishikawa reference and the JP 05-275201 reference. The Johnson reference is cited for the teaching of positioning members having at least two different shapes, specifically with reference to reference locators (66a, 66b, 66c), flat ledges (68a, 68b, 68c), and locating pins (70a, 70b). It is not clear from the Official Action which feature of the Johnson reference would be cited for the first connector, and which feature would be cited for the second connector. However, regardless of such interpretations, it is evident from a review of Figures 1, 2, and 4-6 of the Johnson reference that no structure is disclosed or even suggested that includes insertion guide posts that are arranged at the four corners thereof, and wherein the insertion guide posts protrude outward beyond an outer perimeter of a second connector, as recited in Claim 1.

Thus, the combination of the Ishikawa reference, the JP 05-275201 reference, and the Johnson reference fails to establish a *prima facie* case of obviousness with regard to Claim 1, since the cited references, either when taken singularly or in combination, fail to disclose all of the limitations recited in Claim 1. Accordingly, the Applicants respectfully request the withdrawal of the obviousness rejection of Claim 1 based upon the above combination of references.

Regarding the obviousness rejections of Claims 1 and 8 based on the combination of the Kanamori et al. reference, the JP 05-275201 reference, and the Johnson reference, the Applicants submit that these cited references, either when taken singularly or in combination, fail to disclose all of the limitations recited in Claims 1 and 8.

The Kanamori et al. reference describes a solid state image pickup mounting structure that is used to mount a low pass filter onto the upper surface of a solid state image pickup element and fix them to a reference plate. The Official Action cites CCD reference plate (16) for the teaching of the first connector of Claims 1 and 8, the low pass filter holder member (29) and lens barrel as the second connector, and CCD (10) as the photoelectric conversion module, with reference to Figures 2, 3, and 12.

The Applicants note, however, that the Kanamori et al. reference does not disclose or even suggest insertion guide posts used for inserting the second connector that are arranged at the four corners of the first connector, and wherein the insertion guide posts protrude outward beyond an outer perimeter of the second connector, as recited in Claims 1 and 8. The CCD reference plate (16) of the Kanamori et al. reference does not include such insertion guide posts as recited in Claims 1 and 8, and, as is evident from a review of the Figure 12, the CCD reference plate (16) clearly does not include any guide post structure that protrudes outward beyond an outer perimeter of the low pass filter holder member (29) and lens barrel, which are cited for the second connector of the present invention.

Furthermore, the Applicants submit that the JP 05-275201 reference and the Johnson reference fail to supplement the above deficiencies, for the reasons discussed above with regard to these references.

Thus, the combination of the Kanamori et al. reference, the JP 05-275201 reference, and the Johnson reference fails to establish a *prima facie* case of obviousness with regard to Claims 1 and 8, since the cited references, either when taken singularly or in combination, fail to disclose all of the limitations recited in Claims 1 and 8. Accordingly, the Applicants

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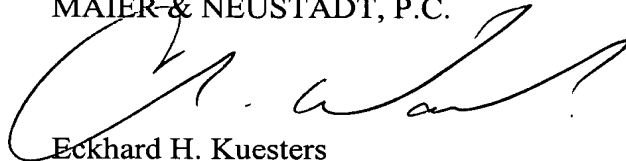
respectfully request the withdrawal of the obviousness rejections of Claims 1 and 8 based upon the above combination of references.

The dependent claims are considered allowable for the reasons advanced for the independent claim from which they depend. These claims are further considered allowable as they recite other features of the invention that are neither disclosed nor suggested by the applied references when those features are considered within the context of their respective independent claim.

Consequently, in view of the above discussion, it is respectfully submitted that the present application is in condition for formal allowance and an early and favorable reconsideration of this application is therefore requested.

Respectfully Submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



Eckhard H. Kuesters
Registration No. 28,870
Attorney of Record

Christopher D. Ward
Registration No. 41,367

Customer Number

22850

Tel. (703) 413-3000
Fax. (703) 413-2220
(OSMMN 10/01)

EHK:CDW:brf
I:\atty\cdw\21xxx\216095US2S\am4.doc